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MODERN APPROACH TO THE TREATMENT OF CHRONIC GENERALIZED PERIODONTITIS

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ABOUT ARTICLE

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Abstract: The article provides up-to-date data on the etiology, etiology, clinical picture and problems with the treatment of generalized periodontitis. The authors came to the conclusion that the treatment should be comprehensive and aimed at eliminating inflammation in the periodontal area, eliminating periodontal pockets, stimulating restorative bone formation, restoring function and adversely affecting the general health and quality of life of the patient. The use of conductors in the drug for the treatment of inflammatory and destructive periodontal diseases is due to the ability to increase the permeability conductivity of the drug to the inflammatory focus, allowing to create an effective concentration of the active drug component, which is part of the composition in the entire volume of periodontal lesions, maintaining it throughout the entire period of treatment.

INTRODUCTION

Periodontal disease ranges from relatively benign gingivitis to chronic and aggressive forms of the disease. There is an inconsistent use of criteria for defining different forms of periodontitis in the literature. Throughout the 20th century, chronic periodontitis was considered an inflammatory disease associated with local irritants and plaque on the surface of the teeth.[5] This concept is popular today. What is now known as "generalized aggressive periodontitis" was not clearly

described until the late 20th century. The purpose of this review is to update the current understanding of chronic and aggressive forms of periodontitis and their implications for diagnosis and treatment.

The initial stage of complex treatment of inflammatory and destructive periodontal disease is an anisotropic therapeutic means aimed at eliminating factors that contribute to the maintenance of the inflammatory process in periodontitis in connection with the attachment of biofilms, including: training and control of individual oral hygiene, removal of excess and sub-gingival deposits of teeth, closed scraping, treatment of caries and its complications, removal of overhanging edges of the filling. An essential element in achieving the effectiveness of treatment is the establishment of trust with the patient [4, 9].Chronic and aggressive periodontitis share many clinical features. They are both complex infections that occur in sensitive hosts and are caused by biofilms with oral microflora inherent in the surface of the teeth [3]. Host response to biofilms is a major cause of the loss of periodontal attachment and alveolar bone supporting the tooth.[4]The end result of these untreated diseases is tooth loss. In the generalized form of both chronic and aggressive periodontitis, the affected individual does not have any known medical or general health conditions that may contribute to the development of periodontitis. If systemic diseases significantly impair the host's ability to cope with the bacterial challenges associated with periodontitis, the term "periodontitis as a symptom of systemic diseases" should and should not be used only in place of "chronic or aggressive", according to the 1999 classification [6].

Although similar in many ways, chronic and aggressive forms of periodontitis have a number of important clinical differences, including age of onset (i.e. detection), rate of progression, patterns of destruction, clinical signs of inflammation, and relative abundance of plaque and calculus. In fact, the combination of these clinical differences leads affected individuals to the 3 main categories of periodontitis (i.e., chronic periodontitis, locally aggressive periodontitis, and generalized periodontitis). Currently, according to the results of numerous experimental and clinical studies, it is scientifically proven that the drug of choice in periodontology is chlorhexidine, since it alone inhibits more than 80% of biofilms [7, 22, 29]. The surface of the teeth, implants and oral mucosa contains bacterial cells, and on its walls contain anionic groups (sulfates, phosphates, carboxyl groups) with a negative charge, so positively charged bisbiguanides have good absorption in them. It is known that the concentration of disinfectant in the oral cavity after a single use lasts up to 3 hours after 8 days of use - up to 14 days, and up to 9 days of use - 11 weeks, this is explained by the ability of chlorhexidine to bind to the carboxyl group of mucin and replace the calcium ions secreted by the salivary glands. Antiseptic retains its activity in the presence of blood, pus, various secretions and organic matter. Chlorhexidine

bigulconate has a pronounced effect on viruses, fungi of the genus Candida, gram-positive and gram-negative aerobic and anaerobic bacteria, without destroying the functional activity of lactic acid bacteria and bifidobacteria [16, 20].

However, despite its high clinical effectiveness, chlorhexidine in the form of a rinse solution has a number of undesirable effects.Staining the surface of the teeth, stuffing, orthopedic structures, mucous membranes; disorders of unpleasant taste and taste sensitivity cause desquamation of the epithelium of the oral mucosa [21, 24]. Antibacterial drugs of systemic action are used in aggressive and severe forms of periodontitis, with somatic pathology, complications after surgical intervention. According to the literature, the following antibiotics are most commonly used: metronidazole, lincomycin, clindamycin, azithromycin, midecamycin, roxithromycin, doxycycline, gramicidin C, amoxicillin, ofloxacin, ciprofloxacin [4, 19].

According to the results of the latest scientific studies, the most effective antibiotic acting on anaerobic microflora is metronidazole. The pharmacy network today presents a variety of topical drugs, including metronidazole in combination with other antibiotics, preservatives and Nsaids: Metrogildenta, aceptor adhesive balm, Hyaldent gel, Diplon film [3, 15].

It should be noted that today the introduction of phage preparations in the treatment of inflammatory and destructive diseases of periodontal tissues is promising. The advantage of bacteriophages over antibiotics is their selective action on pathogenic microflora [7, 16, 21]. In recent years, in many areas of clinical medicine, structural analogues of compounds of the vitamin B6 group have been used, which have antioxidant, immunomodulatory and antibacterial effects. The drug is used in the form of injections and/or infusions into periodontal pockets. The main effect of the drug is membrane protection, which is determined by a decrease in the intensity of the main lipid-regulating membrane-destroying factors. In the domestic literature there are data on the use of drugs in chronic systemic periodontitis against the background of gastric and duodenal ulcers [15, 26, 30].

The effect of ozonated oil "ozonide" on the state of mucosal immunity of the oral cavity in patients with chronic periodontitis has been proven. Ozone affects microcirculation, activity of antioxidant defense systems, and correction of lipid peroxidation disorders. The drug is an oily solution of the product of deep oxidation of unsaturated carbonic acid of natural origin and is used as an application in periodontal pockets [10, 19, 30].

Currently, the use of physiotherapeutic therapy in the complex treatment of inflammatory and destructive periodontal diseases has been scientifically proven. Laser therapy is used as an independent

procedure or in combination with electromagnetic fields [21]. The use of photodynamic therapy leads to the formation of a photocoagulation film, which has anti-inflammatory and conditionally disinfecting properties, which allows to accelerate the regeneration of periodontal tissues [5]. It is known that under the influence of transcranial electrical stimulation, endogenous opioid peptides, which are immunostimulants and can regulate the severity of the immune response, are released.[7] The next stage is surgical treatment, depending on the indications, including open scraping of periodontal pockets, flap surgery, gingivectomy, plastic surgery of the upper and/or lower lip margin, vestibular plasty, and extraction of unsaved teeth [9, 18]. This is followed by orthopedic treatment to restore the integrity and function of the dentition, stabilize the periodontal tissue, and include selective grinding, temporary splints, and the manufacture of removable and non-removable dentures [17, 23]. According to indications, orthodontic treatment is also used aimed at eliminating alveolar bone abnormalities and secondary deformities of the dentition and stabilizing the periodontal complex [19].

The last step is restorative therapy to stimulate bone regeneration. This process is facilitated by the use of means and methods that affect metabolism, microcirculation, and the immune system.[4]

The peculiarity of the etiology of inflammatory and destructive periodontal disease interprets the need for the use of drugs that affect the immune system to increase the duration of remission and reduce the duration of treatment of the disease. Analysis of modern literature allows us to conclude that the use of immunomodulators in the treatment of periodontitis, despite its high efficiency, is not widespread enough at the moment.

The scientifically proven effectiveness of "polyoxydonium" is a domestic chemically pure macromolecular immunomodulator, and also has an antioxidant effect. It is applied topically in the form of a lozenge. The main feature of the drug is the ability to stimulate the anti-infectious resistance of the body, the formation of TNFa increases if its content is at low or medium levels, and slightly decreases with an increase in the content of this cytokine. Thus, the factors of specific and nonspecific defense of the organism are activated [17, 28].

The immunomodulator "Gepon" is a synthetic peptide consisting of 14 amino acid residues. It is used in the form of application to the gums and instillation into the periodontal pocket. Activation of local immunity is associated with the ability of the drug to increase the functional activity of fibroblasts and epithelial cells, which not only changes the spectrum of cytokines synthesized by cells, but also promotes the regeneration of bone tissue [25, 26].

Interesting is also the gel-like form of chitosan ascorbic acid (salts of ascorbic acid and chitosan). Chitosan is a natural biopolymer obtained from components of the arthropod exoskeleton chitin by deacetylation. This polysaccharide has been proven to have immunostimulatory, antioxidant, detoxifying, antibacterial and regenerative activity. However, to date, little is known about the mechanism of regulation of the immune response of this drug [6, 28]. "Betaloykin" is a drug cytokine immunomodulator, which is a recombinant human interleukin-1p. The small molecule of IL-1p is the main mediator of the local inflammatory response, suppresses the spread of infection, eliminates pathogenic microorganisms and improves the regeneration of damaged tissues. Topical application of betalleukin increases the functional activity of neutrophil granulocytes, induces differentiation of precursors of immunocompetent cells, increases the proliferation of lymphocytes and activates the production of cytokines [14, 25].

The drug "Milife", an adaptogen with immunomodulatory, antibacterial and anti-inflammatory activity, is also used orally as part of the complex treatment of moderate periodontitis. As a result of experimental studies and clinical trials, it has been revealed that drugs acting on immune-responsible organs cause the effect of colony-stimulating factors, increase the regeneration of lymphoid cells and thereby induce cellular and humoral immunity [6].

At present, many clinical and experimental studies of immunomodulators - interferon "cyclopheron" are carried out. According to literary sources, little experience has been accumulated in the use of cyclopheron liniment agents in practical dentistry. The drug is known to stimulate bone marrow stem cells, phagocytosis, reduce the activity of pathogenic microflora and help reduce endotoxicity. A positive clinical effect is associated with the ability to restore local nonspecific immune responses and stabilize lipid peroxidation processes. In addition, cyclopheron liniment agents have been used in the complex treatment of chronic systemic periodontitis against the background of hepatitis C, HIV infection, and brucellosis [19, 29].

Immunomodulatory agent "Garavit" is used in the treatment of periodontitis in the form of sublingual tablets and injections. Drugs of domestic origin increase the functional activity of macrophages, increase the synthesis of endogenous interferon, enhance the production of antibodies synthesized against certain pathogens [10, 16].

Immunomodulators of local action "Imudon" have found a wide range of applications in dentistry. It is a multivalent complex of antigens containing bacterial strains of 13 bacteria, which are most common in inflammatory diseases of the oral cavity. The drug enhances phagocytic activity, increases the amount

of lysozyme in saliva, immune-responsible antibody-producing cells, immunoglobulin A, which plays a major role in the oral defense system, and inhibits lipid peroxidation. A large number of clinical and microbiological studies have shown the high efficiency of this drug in the complex treatment of inflammatory periodontal disease of various severity, which appears in the normalization of the immune state of the patient [4, 14, 29]. Another group consists of immunomodulators of plant origin. Interest in studying this group of drugs has been linked to an increase in the number of patients reporting side effects after taking chemotherapy drugs such as addiction, overdose and allergic reactions. According to the data of modern foreign and domestic scientific research literature in the treatment of inflammatory and destructive periodontal diseases, herbal preparations of chamomile, echinacea, eucalyptus, sage, St. John's wort, licorice, celandine, peppermint, yarrow, rhubarb, calendula, alfalfa are used. At the same time, only echinacea, St. John's wort, ginseng and celandine have immunostimulating properties [20, 23].

Among the immunomodulators of domestic production of plant origin, the main share is about 85%, which is a preparation based on echinacea pulpurea. Echinacea extract has an immunomodulatory effect due to the content of phenylpropanoids, which are the most likely active ingredients that alkylamides of chicophosphoric acid, polysaccharides, and unsaturated acids have. The drug promotes the stimulation of phagocytosis, thereby increasing the nonspecific activity of anti-infectious immunity, due to the migration of phagocytes to the lesion focus and the destruction of antigens by the production of reactive oxygen species. To date, echinacea extract is presented in the composition of toothpastes, rinses, tinctures, syrups, and lozenges [23, 31].

For local treatment of inflammatory periodontal disease, various forms of drugs are used: solution, gel, ointment, film, confectionery form [24, 30]. With the local use of drugs for the treatment of periodontitis, there are often problems with the delivery of active pharmaceutical components and the production of the necessary concentration of the drug in the lesion [15].

The effectiveness of these systems in the treatment of inflammatory periodontal disease is insufficient due to the almost complete absence of high conductive activity along with the long-term action of active pharmaceutical components, and to eliminate this problem, some medicines contain hydrophilic bases, which are conductors and/ or protective agents. The use of conductors in the drug for the treatment of inflammatory and destructive periodontal disease is due to the ability to increase the permeability conductivity of the drug to the inflammatory focus, which allows to create an effective concentration of the active drug component, which is part of the composition in the entire volume of periodontal lesions, and maintain it for the entire period of treatment [12, 20].

The most studied and often found in practical health care conductors is dimethylsulfoxide - "dimexide". The drug is a concentrate for preparing solutions for external use. Dosage forms with "dimexide", as a rule, are easy to manufacture, composition and use, and the mechanism of action is associated with the ability to penetrate the biological membrane well and thereby increase permeability to pharmaceutical substances. For the treatment of chronic systemic periodontitis, 1% "Dimexide" with a suspension of 10% ibuprofen, "Colegel" with metronidazole is used. However, the use of dimethylsulfoxide in high concentrations can cause burns of tissues, allergic reactions are also possible, and due to chemical instability, diffusivity and cleaning with oral fluids, the unpleasant sensory-stimulating properties of the solution and the complexity of storage and use limit the use of the drug in practical dentistry, namely periodontology [7, 29]. Modern protectors include "Tizol" - an aqua complex of titanium glycerosorbate. In addition to the ability to diffuse into the focus of the lesion (up to 8 cm) due to the gel structure by titanium atoms chemically bonded with glycerin, the drug has a regenerative, antiseptic, anti-inflammatory and analgesic effect, which makes tizol widely used in various fields of medicine, including dentistry. The drug is completely eliminated from the body within 24 hours, does not accumulate, is not metabolized and has practically no side effects. "Tizol" is also known to refer to metal complex compounds, which contribute to a long shelf life and aseptic storage over the entire shelf life (up to 1 year) [5, 20].

Chronic and aggressive periodontitis response to treatment. The protocol for treating chronic periodontitis is quite established. The protocol for treating aggressive periodontitis is largely empirical and has been subjected to several well-controlled comparative studies [31].The clinical response and the microbiological response to nonsurgical therapy in the treatment of chronic periodontitis have been well documented. The response to periodontal treatment in aggressive periodontitis is much less well understood. The bottom line is that the patient with generalized aggressive periodontitis requires careful monitoring and close collaboration is necessary between all the members of a treatment team.

While the use of antibiotics in periodontal treatment will probably always be controversial, reports from both the American Academy of Periodontology [23] and the European Federation of Periodontology [24] suggests that patients with aggressive periodontitis appear to benefit from the adjunctive use of systemic antibiotics during treatment; however, both also emphasized that knowledge of the optimal drug, dosage and duration providing the greatest effect was unknown at this time.

Beyond isolated case reports, very little has been published about the surgical treatment of generalized aggressive periodontitis. There could be several logical reasons for this: Severe attachment loss on presentation; possible links with covert or undetected systemic disease; the inability to control risk

factors; and a history of poor surgical outcomes with previous patients with generalized aggressive periodontitis.

Although little has been written about prognostic factors in aggressive disease [26], persistent deep pockets, loss of attachment, mobility, furcation invasion, suppuration, plaque, calculus, and other factors such as root grooves, cervical enamel projections, root fractures and poor restorations can help clinicians to predict the outcome of both diseases. These tooth-level factors could be used in the formulation of prognosis in conjunction with a number of subject-level factors including smoking, genetic predisposition, age, gender, race, and contributing medical conditions.

In general, it is likely that risk factors have similar long-term influences on both chronic periodontitis and aggressive periodontitis and they may dictate a poorer long-term prognosis in aggressive disease. Regardless, modulating and correcting these risk factors are critical in the treatment of both chronic periodontitis and aggressive periodontitis. If risk factors, especially smoking, can be eliminated and if compliance with maintenance care is high, then therapy can be as beneficial to the patient with generalized aggressive periodontitis as it is to any other patient. The relatively high rate of sites breaking down over time in aggressive periodontitis patients suggests a likely need for retreatment during the maintenance phase.

CONCLUSION

Overall, while most clinicians would agree that aggressive forms of periodontitis exist as clinical entities, the clinical distinction between chronic and aggressive periodontitis (especially generalized) is not clear cut. However, from a research perspective, it is essential that these diseases be clearly distinguished in order to gain a complete understanding of their etiology and pathogenesis. The relative lack of clinical inflammation and the localized molar-and-incisor form is typical for localized aggressive periodontitis. In contrast, the presence of clinical inflammation in generalized aggressive periodontitis appears to be similar to that observed in chronic periodontitis, and in this situation, age of onset and family history are important additional criteria for either diagnosis or classification. One of the innovative transcutaneous and Transmucous conductors is a domestic development - silicon-containing Glycerohydrogel - "Silativit". This drug is represented by a hydrophilic base, which has high transcutaneous and transmucous activity, compatibility with many drugs, which allows small concentrations of Silativit to penetrate no less deeply into the affected tissues, increasing the effectiveness of active medicinal additives.

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